

REMARKS

This paper is filed in response to the Decision on Appeal rendered on August 9, 2011 (the "Decision on Appeal") and the Final Office Action mailed December 18, 2008 (the "Final Office Action").

Following the amendments above, claims 12-15, 17, 19-23, 25, 36-40, 42-43, 58-70, 72-76, 78-82, 92-96, and 98-111, 113-116, and 120-121 are pending.

Claims 12, 13, 17-23, 36-40, 42, 43, 58-70, 72-76, 78-82, 102-104, 106, 108-111, 113-116, 120, and 121 are rejected under the judicially-created doctrine of obviousness-type double patenting over U.S. Patent No. 5,956,484 to Rosenberg et al ("Rosenberg").

Claims 12, 13, 17-23, 36-40, 42, 43, 58-70, 72-76, 78-82, 102-104, 106, 108-111, 113-116, 120, and 121 are rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 5,685,775 to Bakoglu et al. ("Bakoglu") in view of U.S. Patent No. 5,299,810 to Pierce et al. ("Pierce") and an article entitled "Tele-Virtual Reality of Dynamic Mechanical Model" to Yamakita et al ("Yamakita").

Claims 14-15, 25, 92-96, 98-101, 105, and 107 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Bakoglu in view of Pierce and Yamakita and further in view of an article entitled "A Low-Cost Force Feedback Joystick and its Use in PC Video Games" authored by Ming Ouhyoung et al, and published in the IEEE Transactions on Consumer Electronics, Vol. 41, No. 3, Aug. 1995 (hereinafter referred to as "Ouhyoung") and an article entitled "MagicMouse: Tactile and Kinesthetic Feedback in the Human-Computer Interface using an Electromagnetically Actuated Input/Output Device" authored by Kelley et al (hereinafter referred to as "Kelley").

In this response, Applicant has amended claims 12-15, 17, 19, 25, 37-39, 42, 43, 58, 59, 75, 78, 101-103, 107, 108, 120, and 121, and cancelled claim 18. No new matter is added by these amendments and support may be found in the specification and claims as originally filed.

Applicant traverses each of the bases of rejections in the Final Office Action and respectfully requests reconsideration and allowance of all claims in view of the amendments above and the remarks below.

I. Double Patenting

Applicant submits herewith a Terminal Disclaimer over Rosenberg to obviate the double-patenting rejection. Applicant respectfully requests the Examiner withdraw the rejection over Rosenberg.

II. § 103(a) – Claims 12, 13, 17-23, 36-40, 42, 43, 58-70, 72-76, 78-82, 102-104, 106, 108-111, 113-116, 120, and 121 – Bakoglu in view of Pierce and Yamakita

Applicant respectfully traverses the rejection of claims 12, 13, 17-23, 36-40, 42, 43, 58-70, 72-76, 78-82, 102-104, 106, 108-111, 113-116, 120, and 121 under 35 U.S.C. § 103(a) as being unpatentable over Bakoglu in view of Pierce and Yamakita.

To establish *prima facie* obviousness of a claimed invention under 35 U.S.C. § 103, the Office Action must show, either from the references themselves or in the knowledge generally available to one of ordinary skill in the art, that the cited references disclose or suggest each claimed element.¹

Because Bakoglu in view of Pierce and Yamakita does not disclose “said second electronic device further configured to interpret force information repeatedly received from said first electronic device over said network ... and cause said actuator to generate a physical feel sensation at said human/computer interface based, at least in part, on said force information” as recited in amended claim 12, claim 12 is patentable over Bakoglu in view of Pierce and Yamakita. The Final Office Action states the Bakoglu does not disclose the transfer of haptic feedback information. Applicant has amended claim 12 to recite force information, which is similarly not disclosed in Bakoglu. Pierce similarly does not disclose receiving force information from a first electronic device over a network. Pierce discloses multiple computers using a shared RAM to play a “tank” game. Players can fire projectiles at other player’s tanks to try to destroy them. The projectile information is stored in the shared RAM and each computer polls the RAM to determine if its “tank” has been struck by a projectile by comparing the projectile position with the respective computer’s tank’s position. If a tank is struck by a

¹ See M.P.E.P. § 2143.03; see also Graham v. John Deere Co., 383 U.S. 1 (1966), KSR Int’l Co. v. Teleflex Inc., 550 U.S. 398 (2007).

projectile, the computer causes a plunger to strike the player's seat to indicate the projectile hitting the tank. However, no force information is passed between the different computers. A computer may determine whether a projectile has struck its tank, but it actuates the plunger based on the determination of the impact, not based on any force information received from another computer. Similarly, no computer transmits force information to any other computer.

Finally, Yamakita does not disclose or suggest "said second electronic device further configured to interpret force information repeatedly received from said first electronic device over said network ... and cause said actuator to generate a physical feel sensation at said human/computer interface based, at least in part, on said force information." Instead, Yamakita teaches away from sending force information in its disclosed tug-of-war system. When describing the system, Yamakita states that "[a] problem of the structure is that the model is not driven by the actual force given by the players because of the actuator dynamics." Instead of sending force information, velocity information (i.e. \dot{x}) is sent. The velocity information may then be used to generate an appropriate force. Thus, in the two-player scenario, Yamakita teaches that force information should not be sent, but rather velocity information should be sent, which is similar to the position information, i.e. non-force information, described in Pierce.

Further, Yamakita also teaches away from sending force information in the two-player scenario because Yamakita teaches that sending force information in the two-player scenario is inappropriate. Yamakita teaches that in the two-player scenario, each of the players acts as an operator in a master-slave scenario as described in section 2 of Yamakita.² As taught in section 2, the operator (master) "commands a position (velocity) to a slave system."³ Because each player is an operator, when each player pulls on her respective rope causing her device to determine a velocity, which is sent to the opposing player's device, as is shown in Figure 7.⁴ Thus, if player 1 and player 2 are each playing the tug-of-war game, player 1's inputs are sent as velocity information to player 2's device, and player 2's inputs are sent as velocity information to player 1's device. However, no force information is sent back to player 1 from player 2 based on player 1's inputs, for example, because the resulting forces at the player 2's devices are of no interest to the player 1 – the system is not intended to relay back the forces felt by player 2

² Yamakita, p. 1106 ("In the system the model acts as a slave system including environment dynamics, and players does as an operator in the tele-operator system.") (emphasis added).

³ Yamakita, p. 1103.

⁴ It can be clearly seen in Figure 7 that velocity information (i.e. \dot{x}) is sent from one operator to the other.

because player 1 should feel forces based on inputs made by player 2 (which are transmitted from player 2 as velocity information as discussed above and shown in Figure 7).

Thus, in the two-player scenario, each player is only intended to receive information regarding his opponent's actions, i.e. the disclosed velocity information, not forces fed back based on the particular player's input. And as discussed above, the velocity information in Yamakita is similar to the position information, i.e. non-force information, described in Pierce. Thus, in a two-player scenario, Yamakita teaches away from transmitting force information.

Therefore, Bakoglu in view of Pierce and Yamakita does not disclose or suggest said second electronic device further configured to interpret force information repeatedly received from said first electronic device over said network ... and cause said actuator to generate a physical feel sensation at said human/computer interface based, at least in part, on said force information." Applicant respectfully requests the Examiner withdraw the rejection of claim 12.

Independent claims 17, 38, 58, 75, 101-103, 120, and 121 each recite similar elements as those discussed above with respect to claim 12. Thus, each of independent claims 17, 38, 58, 75, 101-103, 120, and 121 is similarly patentable over Bakoglu in view of Pierce and Yamakita.

Because claims 13, 18-23, 36, 37, 39, 40, 42, 43, 59-70, 72-74, 76, 78-82, 104, 106, 108-111, and 113-116 each depend from and further limit one of claims 12, 17, 38, 58, 75, 101-103, 120, or 121, each of claims 13, 18-23, 36, 37, 39, 40, 42, 43, 59-70, 72-74, 76, 78-82, 104, 106, 108-111, and 113-116 is patentable over Bakoglu in view of Pierce and Yamakita for at least the same reasons. Applicant respectfully requests the Examiner withdraw the rejection of claims 13, 18-23, 36, 37, 39, 40, 42, 43, 59-70, 72-74, 76, 78-82, 104, 106, 108-111, and 113-116.

III. § 103(a) – Claims 14-15, 25, 92-96, 98-101, 105, and 107 – Bakoglu in view of Pierce, Yamakita, Ouhyoung, and Kelley

Applicant respectfully traverses the rejection of claims 14-15, 25, 92-96, 98-101, 105, and 107 under 35 U.S.C. § 103(a) as being unpatentable over Bakoglu in view of Pierce, Yamakita, Ouhyoung, and Kelley.

Because Bakoglu in view of Pierce, Yamakita, Ouhyoung, and Kelley does not disclose or suggest "said second electronic device further configured to interpret force information repeatedly received from said first electronic device over said network ... and cause said actuator

to generate a physical feel sensation at said human/computer interface based, at least in part, on said force information” as recited in claim 12, from which claims 14, 15, and 25 depend, claims 14, 15, and 25 are each patentable over Bakoglu in view of Pierce, Yamakita, Ouhyoung, and Kelley. As discussed above, Bakoglu in view of Pierce and Yamakita does not disclose or suggest such a feature. Ouhyoung and Kelley do not cure this deficiency. Kelley discloses an interface device capable of outputting haptic effects. However, Kelley does not discuss sending or receiving haptic feedback information between computers across a network.

Similarly, Ouhyoung discloses a joystick device capable of outputting haptic effects. However, Ouhyoung also does not discuss sending or receiving haptic feedback information between computers across a network.⁵

Thus, Bakoglu in view of Pierce, Yamakita, Ouhyoung, and Kelley does not disclose or suggest “said second electronic device further configured to interpret force information repeatedly received from said first electronic device over said network ... and cause said actuator to generate a physical feel sensation at said human/computer interface based, at least in part, on said force information” as recited in claim 12. Therefore claims 14, 15, and 25 are each patentable over Bakoglu in view of Pierce, Yamakita, Ouhyoung, and Kelley. Applicant respectfully requests the Examiner withdraw the rejection of claims 14, 15 and 25.

Claims 92-96, 98-101, 105, and 107 are each patentable over Bakoglu in view of Pierce, Yamakita, Ouhyoung, and Kelley for similar reasons. Applicant respectfully requests the Examiner withdraw the rejection of claims 92-96, 98-101, 105, and 107.

⁵ See, Ouhyoung, Abstract.

CONCLUSION

Applicant respectfully asserts that in view of the amendments and remarks above, all pending claims are allowable and Applicant respectfully requests the allowance of all claims.

Should the Examiner have any comments, questions, or suggestions of a nature necessary to expedite the prosecution of the application, or to place the case in condition for allowance, the Examiner is courteously requested to telephone the undersigned at the number listed below.

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Respectfully submitted,



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